

ACTION: Policy Regarding Use of H-11 Bolts in
Primary Structure on Transport Airplanes

Date: May 16, 1986

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The service history on H-11 bolts used in primary structure indicates a higher than normal failure rate. Their failures are usually attributed to stress corrosion cracking, and can become a safety problem.

The use of H-11 bolts in primary aircraft structure is discouraged and should not be considered for use on new type design airplanes. There are other fasteners available which have demonstrated satisfactory service experience. Inconel 718 and Stainless Steel are examples of acceptable substitutes.

Each Aircraft Certification Office should review all designs which incorporate H-11 bolts in critical structures on all transport category airplanes under jurisdiction. Where service experience indicates a problem with H-11 bolts in these critical areas, an airworthiness directive should be issued to require replacement of the H-11 bolts with an approved substitute as soon as practicable.

We are planning to issue an Advisory Circular on the subject. In the interim, the following guidance is offered for the use of H-11 bolts and nuts:

A. H-11 bolts should be replaced with a different type of bolt if any of the following conditions exists:

1. Where bolts are exposed to high temperature (above 250° F) and where simultaneous exposure to hydraulic fluids is possible.

2. Where they are exposed to a corrosive environment such as moisture, air, exhaust gases, etc., at ambient temperature.

3. Where they are used primarily in tension application in any environment continually exposed to weather.

4. Where they are used in any application, including both tension or shear, in which a single failure could be catastrophic.

5. Where bolts are used in any application where the inspection requirements are excessive, thereby increasing the probability of non-detection of failed bolts.

6. Where the bolt failure history indicates a need for replacement.

B. Where H-11 bolts are used, they should be encapsulated against environmental effects.

This information should be transmitted to all manufacturers and modifiers of transport airplanes in each directorate.

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